Abstract

An golf flight path and swing monitoring apparatus includes a first and second spaced-apart sensors for determining club head speed during a golf downswing. A computer running a software program is configured for calculating the swing path, club head speed and club head angle at impact with a ball based on the monitored light signals of the sensors. Multiple temporally successive images of the ball after impact are captured for comparison and total ball flight characteristics determination. The golf ball has a stripe at least halfway around its surface that is apparent within each image notwithstanding the rotated position of the ball. Linear extrapolations of the marking and circumferential extrapolations of the images are automatically performed by the computer. Three-dimensional positions, preferably based on calculated diameters, are calculated based on the circumferential extrapolations. Initial backspin, sidespin and three-dimensional velocity of the golf ball are calculated based on the circumferential and linear extrapolations, and on the curvature and position of the stripes, and the calculated three-dimensional positions. The sensors are used to trigger the shuttering of the camera and flashlamps used to capture the images. An impact image can also be captured and the relative position of the club head to the ball at impact observed and evaluated. The energy transfer efficiency of the impact between the club head and ball may also be determined and compared with other transfer efficiencies of other impacts of other swings.